

Tool-Activated Vacuums

by David Grubb

A shop vacuum may not be the first piece of equipment you buy when you go into the construction business, but it's a tool no contractor can afford to be without. My company does remodeling, and cleanup is an important part of the job, especially when the client is living in the house.

When I started the business, we used basic barrel-style shop vacuums. This type of vac is inexpensive and has good power, but allows the finer particles to escape and is incredibly loud. We now use automatic dust-collecting models. I prefer this type of machine because many of our tools can be connected to a vac hose and it's more convenient if the suction comes on automatically. These

Though they cost more than common shop vacuums, these units are quieter and have better filters

vacuums can also be used for general cleanup, which is what we usually use them for. Most automatic vacs are high-end machines, so they're quiet and can be equipped with a better grade of filter.



For this article, we tried out seven tool-activated models: the Attix 8 AS/E, Bosch 3931, Clarke CTV-7, Fein Turbo II, Fein Turbo III, Festool CT 33 E, and Porter-Cable 7812. We didn't perform lab tests on the vacs; we took them to the job site and used them for everyday remodeling work.

In evaluating these tools, we looked primarily at durability, portability, capacity, and the ability to maintain a high level of suction over time. We also wanted to find out what it took to go between wet and dry vacuuming and whether the machines accepted HEPA filters.

Durability

We might use a vac to collect dust one day and then throw it in the back of the truck or drag it around a crawlspace the next. This creates many opportunities for damage, and over time we have broken off a number of plastic parts.

For example, my crew dropped a Fein Turbo II and broke its handle, which is made from a brittle type of plastic. The motor housing is more substantial, but is made from an equally brittle material. Festool's vac is mostly brittle plastic and is not intended to be abused. Fein's tanks and the tanks and housings on the Clarke, Attix, Porter-Cable, and Bosch are made from a more impact-resistant type of plastic.

A friend of mine broke the front wheels off Bosch's 3931 while hauling it down a folding stair. These wheels are like the casters on an office chair, and they gave way because they got hung up on a tread. It was aggravating, but the wheels would not be hard to replace. Similar wheels can be found on the Porter-Cable, Attix, and Clarke.

Dual-stage motors. We have never worn out a motor on this type of vacuum. Cheaper models are equipped with single-stage motors that exhaust the air across the armature and brushes. This cools the motor but may put grit inside. If the hose gets clogged, the airflow stops and the windings can overheat. The vacuums we tested have dual-stage motors. One fan creates suction and another fan provides cooling. The inside of the motor is segregated from the exhaust, and if the hose gets clogged, the cooling fan will continue to provide air.

Portability

These tools vary a lot in terms of portability. The bigger, heavier models, like the Bosch 3931, Festool CT 33 E, and Fein Turbo III, are better suited for use in a single location. This is especially true of the Bosch, which weighs 44 pounds empty and is difficult to lift when the tank is full of something heavy, like broken plaster. The Attix 8 AS/E, Clarke CTV-7, Porter-Cable 7812, and Fein Turbo II are smaller and lighter, so they're easier to store and haul around.

We prefer a vac with a low center of gravity, because it's less likely to tip when you pull on the hose. The Festool, Bosch, and Porter-Cable are the most stable vacuums we tested. The Fein models are tall and somewhat top-heavy when empty. The Turbo III has a metal cradle to help you store the hose. The Bosch's handle is a convenient place to wrap the hose, but it makes the vac taller, so it's harder to fit in your truck.

Every model except the Clarke has a place to hang the cord. The Festool has a cord wrap and the Attix, Bosch, and Porter-Cable have substantial cord hooks. Fein's nublike projection is too short to securely hold a cord.

Power

According to the specs (see chart on last page), these vacuums are similar in terms of suction power. Some have more air flow and this makes them better at collecting small or light particles. Others have more static lift, which is a measure of a tool's ability to lift heavy materials like liquids.

Every vac we tested had good power, but the Bosch, Festool, and Fein Turbo III felt more powerful in use. The greatest differences between tools were related to the diameter of the hose and our ability to keep filters from getting clogged.

Hose diameter. Most of the vacs come with a 1¹/₄-inch hose. This is fine for picking up dust but a little small for collecting major debris. Splinters, broken plaster, and chunks of drywall can easily clog a smaller hose. This is less of a problem for the Turbo III because it comes with a 2¹/₄-inch hose.

To compare suction, we timed how long each vac took to empty a five-gallon bucket of sawdust. As it turned out, the diameter of the hose was a much better predictor than the specs.

Attix 8 AS/E

This vacuum is produced by Nilfisk-Alto, the successor company to WAP. It is light, compact, and extremely quiet. We tested the eight-gallon version, but larger models are available. I particularly like the cleaning mechanism, which knocks dust out of the filter by reversing the flow of air.

This makes it much easier to maintain suction. The one thing I don't like about the Attix is the alarm that notifies you when the filter is dirty. It will often beep during normal operation and will beep constantly if the dial that designates hose size is not properly set.

Nilfisk-Alto • 877/366-2586 • E-mail: info@altocsi.com (Web site unavailable)



Bosch 3931 Airsweep

The Airsweep has excellent power and a low center of gravity. It feels well made and is equipped with a built-in shaker for cleaning the filter. The shaker is exceptionally effective and can be run on demand or set to come on automatically as needed.

The removable metal handle is a handy place to wrap and store the hose, but it makes it harder to stow and transport the machine. This would be a great vacuum to have in a shop, but it's too heavy and bulky to haul around on a regular basis.

Bosch Power Tool • 877/267-2499 • www.boschtools.com



Clarke CTV-7

The CTV-7 is an extremely light and simple machine. It's controlled with a three-position rocker switch and is the only model besides the Festool that allows you to connect a hose to the exhaust and use it as a blower. The

CTV-7 would be fine for handyman work, but the tank is too small to collect large amounts of debris. This model resembles the Attix because both machines are from separate divisions of the same parent company.

Clarke • 800/253-0367 • www.clarkeus.com



Fein

Fein (pronounced "fine") produces two automatic dust vacs. The Turbo II is the earlier and smaller model. It comes with a five-micron cloth filter that is designed to be used without a bag, but you can easily equip it with a one-micron or HEPA filter plus a bag. What I like about this tool is that it's well made and reasonably priced, and

filters and bags are readily available. What I don't like is that it's top-heavy when empty and the bucket-shaped filter is difficult to clean. The motor housing is made from a type of plastic that is more brittle than that on the other brands, and the control switches are poorly labeled, so it's easy to hit the wrong one.

Fein Power Tools USA • 800/441-9878 • www.feinus.com



The first time through, the Turbo III — the only model with a 2¹/₄-inch hose — blew the other vacs away. We tried again, but used the bigger hose on the other machines. This time they were all pretty close, but the Bosch, Festool, and Turbo III felt more powerful than the rest. The CTV-7 and Attix 8 AS/E seemed in line with the second tier of vacs, but we were unable to time them, because with a filter neither is big enough to hold five gallons of sawdust.

If I were buying a vacuum, I'd use the standard hose for light work but buy a bigger one for heavy cleanup. The 2¹/₄-inch hose that comes on the Turbo III can be purchased separately for \$45 and used on any of the other machines. Festool also sells a bigger hose.

Loss of Suction

A vacuum might have excellent power at first, but suction drops off as the filter clogs with dust. The standard fix is to remove the filter and beat or blow it clean. This is inconvenient and makes a big cloud of dust.

Cleaning mechanisms. A few models allow you to clean the filter while it's in the machine. Festool and Porter-Cable use manually operated handles to shake and flex the filter so the dust falls out. The Attix 8 AS/E allows you to blast the dust out of the filter by covering the end of the hose and hitting a button that reverses the flow of air. Bosch uses a mechanical shaker to clean its filters. You can activate it manually (Pulse-Clean) or set it to come on automatically whenever the filters are dirty. When the shaker is running, the vac will emit a series of loud thumps. The cleaners on the Bosch and Attix are especially good at bringing the machine back to full suction.

Dust bags. All of the vacs can be used with disposable dust bags. Bags make it neater and easier to empty the tank, and they extend the life of the main filter by keeping most of the debris off of it.

However, the expense adds up if you collect a high volume of material, and your local suppliers may not stock the size and brand you need. My local lumberyard stocks bags for Fein and Porter-Cable. If I need a bag for another model, I have to mail-order it or go to a different supplier. Filters are harder to find, but they don't have to be replaced very often.

It's possible to use these vacs without a bag, but we only do it when we're collecting coarse material such

as sawdust. Fine material like drywall dust will quickly clog an unprotected filter, so we normally collect it with a bag.

Filter Options

One of the things to think about when buying a vac is what level of filtration you actually need. We own a number of vacuums, and only one of them can be used with a HEPA filter. A HEPA filter is designed to capture nearly all particles down to .3 micron in size. We mainly use this vac at the end of the job or on projects where the client is sensitive to dust or concerned about being exposed to toxins like lead paint. HEPA filters are expensive, so we only use them when we have to.

Many of these vacuums accept more than one type of filter. The Clarke and Attix models come with a one-micron pleated cylindrical filter but also accept a HEPA cartridge. They can be used with or without a bag. If a bag isn't used, you can keep the worst of the dust off the filter by covering it with an optional fabric sleeve.

Both Fein vacs come with a bucket-shaped five-micron cloth filter. This filter can be used alone or with a pleated (one-micron or HEPA) filter downstream. Fein's pleated filters can be used with dust bags or by themselves if you're not concerned about clogging them up.

The Bosch, Festool, and Porter-Cable vacs take flat pleated filters. Bosch requires filters, but its vac can be used with or without bags. A one-micron filter is standard, but a HEPA filter is available. The Porter-Cable takes a five-micron filter and the Festool takes a pair of three-micron filters. Neither takes HEPA filters. Both can be used without a bag, but it's not recommended.

Wet Vacuuming

All these tools can be used for wet vacuuming, which is the one time you are not allowed to use a bag. Fein and Festool require you to install foam filters before vacuuming wet material. Luckily, the filters are cheap.

Bosch and Porter-Cable require the use of standard filters when collecting liquids. The filter needs to dry before it's used again for normal vacuuming; otherwise, it could be ruined. Bosch recommends keeping a spare set of filters on hand, but at \$99 per set that's hard advice to follow. Porter-Cable's filter is only \$18. The

Fein Turbo III 9 77 25

The Turbo III is a larger, more powerful version of Fein's Turbo II (see previous page). It takes the same filters but uses bigger dust bags. Everything that applies to the Turbo II applies to this machine. Apart from size, the most noticeable difference is

the 2¹/₄-inch hose that comes with this vac. The Turbo III was one of our favorites for heavy cleanup because it felt more powerful than most other vacs and the larger hose did not clog as often as the 1¹/₄-inch hoses that are standard on other machines.

Fein Power Tools USA • 800/441-9878 • www.feinus.com



Festool CT 33 E

The CT 33 E is the largest of three vacuums that Festool makes. It is well made, powerful, and very quiet. It is specifically designed to be used as a dust collector for Festool's other tools (see "Cabinetmaking With Festool," *JLC* 11/02). We tried the CT 33 E with Festool's saw and it's an excellent

machine for that purpose. I would consider buying into the Festool system, but only if I could reserve the tools for finish work alone. The CT 33 E is a first-rate vacuum, but it's not intended for general cleanup. It's too big, heavy, and delicate for most of the work we do.

Festool • 888/337-8600 • www.festool-usa.com



Porter-Cable

The 7812 is a durable vacuum with a low center of gravity. It holds a lot for its size because the filter does not hang into the tank. The large on/off switch is easy to get at and is wired to a sensor that automatically switches to the dust-collection mode when a tool is plugged into it. The filter can be cleaned in the machine by manipulating a spring-loaded rod. We like the 7812 because it's

powerful and easy to operate, and because our local suppliers carry the bags. The only thing we don't like about this vac is that it doesn't take a HEPA filter. Porter-Cable makes a second version of this machine, model 7814, which we didn't test. It's identical to the 7812 except that its tank is larger and it is equipped with a handle and a different set of wheels.

Porter-Cable • 800/487-8665 • www.portercable.com



Vacuum Specs

| | Attix 8 AS/E | Bosch 3931 Airsweep | Clarke CTV-7 | Fein Turbo II 9 55 13 | Fein Turbo III 9 77 25 | Festool CT 33 E | Porter-Cable 7812 |
|--|-----------------|---------------------------|-----------------|--------------------------|---------------------------|--------------------|----------------------|
| Street price | \$390* | \$399 | \$280 | \$245 | \$289 | \$445 | \$269 |
| Weight (pounds)** | 27 | 44 | 21 | 26 | 29 | 41 | 27 |
| Size of tank (gallons) | 8 | 13 | 7 | 9 | 14.5 | 8.7 | 10 |
| Airflow (cfm) | 120 | 130 | 110 | 116 | 126 | 134 | 114 |
| Static lift (inches) | 90 | 100 | 95 | 90 | 99 | 90 | 94 |
| Noise (decibels)*** | 70 | 74 | 81 | 72 | 72 | 77 | 77 |
| Standard filter | 1-micron | 1-micron | 1-micron | 5-micron | 5-micron | 3-micron | 5-micron |
| Cost to replace standard filter | \$50 | \$99/set | \$50 | \$30 | \$30 | \$20/pair | \$18 |
| Cost for paper dust bags | 5 for \$37 | 5 for \$30 | 5 for \$26 | 5 for \$40 | 5 for \$40 | 5 for \$22 | 3 for \$12 |
| Cost for HEPA filter | \$150 | \$240/set | \$110 | \$80 | \$80 | not available | not available |

* includes nozzles and floor tools

** includes hose and standard filter

*** from 48 inches away with no load on the machine

standard filters on the Clarke and Attix are immersible, but it's probably easier to use an optional foam sleeve.

The Fein, Attix, and Clarke vacs are prevented from overfilling by a float that plugs the exhaust. The Bosch, Festool, and Porter-Cable have low-voltage contacts that cut power to the motor once they're immersed.

Automatic Dust Collection

Many newer power tools have dust ports that can be connected to a vacuum hose. With an automatic model, the tool plugs into the vac and the vac comes on in response to the tool. Some of the dust may escape, but this arrangement keeps the mess down when you're working in a finished space.

It's aggravating when the vac hose doesn't fit the port on the tool. This is less likely to happen if the vacuum and tools are from the same manufacturer. If the hose doesn't fit, avoid the temptation to cobble things together with duct tape, because it'll be hard to take them apart. It's worth spending \$4 to \$15 to buy a hose adaptor. Bosch, Fein, and Porter-Cable sell adaptors that connect their hoses to various brands of tools.

Capacity

The amount of material that a vacuum can hold is determined by the volume of the tank. However, the specs for this can be misleading.

According to the specs, the Clarke CTV-7 holds seven gallons and the Attix 8 AS/E holds eight gallons. But neither one of these vacs was able to suck all of the sawdust out of a five-gallon drywall bucket. They were both completely full before the dust bucket was empty.

The dry capacity is even less when a dust bag is used, because the bag does not fill the entire tank. On many vacuums, the filter takes up valuable space within the tank. This is not a problem with Festool and Porter-Cable, because their filters are in the housing above.

Favorites

If I were going to buy a dust vacuum and did not need to use HEPA filters, I would buy the Porter-Cable, because it's light, powerful, and compact. If I wanted HEPA, I would get the Attix 8 AS/E, because it's quiet, compact, and has a very good filter-cleaning mechanism.

If I were buying a vacuum for a shop or did not go to a lot of different job sites, I would get the Bosch, because it's very powerful and has an efficient filter cleaner.



David Grubb is a remodeling contractor in Berkeley, Calif.